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MBA PROFESSIONAL REPORT

A Cost Analysis of the Department of the Navy Humanitarian Assistance and Disaster Response to the 2011 Tohoku Earthquake and Tsunami

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June 2012

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On March 11, 2011, the Tohoku earthquake and tsunami triggered overwhelming destruction and loss that had global implications. Because of the random nature of disasters, funding for response efforts is not currently included in the budget submitted for the Department of Defense. Thus, when the Department of the Navy responds to a natural disaster and provides humanitarian assistance, great fiscal costs are incurred, which must be accurately tracked and reported for reimbursement.

This project investigates the response of the U.S. Navy following the 2011 Tohoku earthquake and tsunami in Japan. The objective of this research is to analyze the operating costs associated with each DoN vessel and aircraft type. In order to determine the most cost-effective platform(s) the Navy should use when responding to a disaster, an in-depth analysis of all direct and indirect costs associated is provided. As a result, this analysis will provide senior leaders and policy makers with timely operational and financial policy recommendations to better prepare for unforeseen events in the future.

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A COST ANALYSIS OF THE DEPARTMENT OF THE NAVY HUMANITARIAN ASSISTANCE AND DISASTER RESPONSE TO THE 2011 TOHOKU EARTHQUAKE AND TSUNAMI

ABSTRACT

On March 11, 2011, the Tohoku earthquake and tsunami triggered overwhelming destruction and loss that had global implications. Because of the random nature of disasters, funding for response efforts is not currently included in the budget submitted for the Department of Defense. Thus, when the Department of the Navy responds to a natural disaster and provides humanitarian assistance, great fiscal costs are incurred, which must be accurately tracked and reported for reimbursement.

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TABLE OF CONTENTS

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LIST OF FIGURES

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LIST OF TABLES

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LIST OF ACRONYMS AND ABBREVIATIONS

AIRPAC	Commander Naval Air Forces, U.S. Pacific Fleet
AOR	Area of Responsibility
BSO	Budget Submitting Office
CFFC	Commander, Fleet Forces Command
CG	Guided Missile Cruiser
COCOM	Combatant Commander
COMPACFLT	Commander, United States Pacific Fleet
CSG	Carrier Strike Group
DART	Disaster Assistance Response Team
DDG	Guided Missile Destroyer
DFM	Marine-Grade Diesel Fuel
DoD	Department of Defense
DoN	Department of the Navy
DoS	Department of State
DSCA	Defense Security Cooperation Agency
FEMA	Federal Emergency Management Agency
FHP	Flying Hours Program
FLC	Fleet Logistics Center
GPS	Global Positioning System
HA	Humanitarian Assistance
HA/DR	Humanitarian Assistance and Disaster Response
HAP	Humanitarian Assistance Program
HASC	House Armed Services Committee
HCA	Humanitarian Civic Assistance
HIU	Humanitarian Information Unit
HMA	Humanitarian Mine Action
HN	Host Nation
HQ	Headquarters
JSF–J	Joint Support Force–Japan
JTF	Joint Task Force

LFA	Lead Federal Agency
M9	9.0 Magnitude
MIPR	Military Interdepartmental Purchase Request
MRE	Meal, Ready to Eat
NAVAIR	Naval Air Systems Command
NAVSEA	Naval Sea Systems Command
NEO	Non-Combatant Evacuation Operation
NGO	Non-Governmental Organization
O&M	Operations and Maintenance
O&M, N	Operations and Maintenance, Navy
OASN(FM&C)	Office of the Assistant Secretary of the Navy for Financial Management and Comptroller
OPNAV	Office of the Chief of Naval Operations
OFDA	Office of Foreign Disaster Affairs
OHDACA	Overseas Humanitarian, Disaster Assistance, and Civic Aid
OMB	Office of Management and Budget
OSD	Office of the Secretary of Defense
SECDEF	Secretary of Defense
SPAWAR	Space and Naval Warfare Systems Command
SURFPAC	Commander Naval Surface Force, U.S. Pacific Fleet
UN	United Nations
UNAVCO	University Navstar Consortium
USAID	United States Agency for International Development
U.S.C.	United States Code
USCG	United States Coast Guard
USF-J	United States Forces-Japan
USGS	United States Geological Survey
USMC	United States Marine Corps
USN	United States Navy
USPACOM	Commander, United States Pacific Command
USS	United States Ship (U.S. Navy)

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I. INTRODUCTION

A. TOHOKU EARTHQUAKE

On March 11, 2011, the Tohoku earthquake and tsunami triggered overwhelming destruction and loss, ensuing an immediate global response from humanitarian organizations to provide aid and relief. The Department of the Navy (DoN) responded as a major provider of humanitarian relief to the country of Japan. In *A Cooperative Strategy for 21st Century Seapower*, the DoN delineated humanitarian assistance and disaster response (HA/DR) as one of six expanded core capabilities for the Navy, Marine Corps, and Coast Guard (Department of the Navy [DoN], 2007). However, natural disasters and humanitarian efforts are not currently included in budget submissions for the Department of Defense (DoD). Thus, when the United States Navy (USN) responds to a natural disaster and provides humanitarian assistance, significant costs are incurred.

B. PURPOSE AND RESEARCH OBJECTIVES

Due to the unforeseen nature of natural disasters, the DoN cannot precisely predict all costs associated with future HA/DR missions. Not every disaster is the same; therefore, not every HA/DR mission encompasses the same costs. Although costs vary for each natural disaster, identifying the operational cost drivers associated with HA/DR missions can enable budget analysts, comptrollers, and operational planners to better prepare for future disasters. Under conditions of resource scarcity, the DoN must operate efficiently when conducting all operations to include HA/DR missions.

The capabilities of USN ships that responded to previous HA/DR missions such as the 2010 Haiti earthquake and the 2010 Pakistan floods are described by Greenfield and Ingram (2011). The authors emphasized that

> Knowing the best possible asset to assign to a disaster will improve the DoD's effectiveness in regaining stability, both monetarily and logistically, within the affected region as disasters occur, and knowing which assets are best suited for disaster response will help the USN with future force structure and fleet composition. (p. 6)

Our project investigates the costs associated with the response of the DoN following the 2011 Tohoku earthquake and tsunami in Japan. We review the direct and indirect operating costs associated with the initial responding DoN assets of the HA/DR mission between March 2011 and June 2011. Ures (2011) used a similar technique to determine the incremental operating costs for the HA/DR missions in the case study that evaluated the 2010 Haiti earthquake, the 2010 Pakistan floods, and the 2004 Indian Ocean tsunami. Our analysis takes Ures' technique a step further to determine not only the incremental cost drivers but also the specific unit types (i.e., ships and aircraft) that incurred the most operating costs throughout the response.

By identifying the cost drivers and the unit types that incur the most significant portion of HA/DR operational costs, the DoN can determine the most cost-effective platform(s) to use in future HA/DR missions. We use the Tohoku earthquake and subsequent tsunami cost data provided to us from our sources to identify the total cost of the HA/DR mission borne by the DoN. From this cost data, we will identify the cost elements associated with the initial ship and aircraft response of the HA/DR mission.

C. ORGANIZATION OF REPORT

The structure of this research project encompasses a total of five chapters. In the next chapter, we discuss more broadly the background of the Tohoku earthquake and the subsequent events involving the United States and the DoD. The background chapter also briefly describes Overseas Humanitarian, Disaster Assistance, and Civic Aid (OHDACA) funding. In Chapter III, we describe the methodology used to both collect and analyze the data needed to answer our questions about operating costs. In Chapter IV, we analyze the empirical data collected from our sources. Finally, in Chapter V, we offer conclusions based on our findings as well as potential topics for future research projects.

II. BACKGROUND

A. UNITED STATES DISASTER RESPONSE

The Federal Emergency Management Agency (FEMA) defines a disaster as an event that causes 100 deaths injuries, or damage exceeding one million U.S. dollars (FEMA, 2010). The first several hours after a major natural disaster constitute a period of *incomplete situational awareness* (United States Department of State Humanitarian Information Unit [HIU], 2010). The initial challenge in determining what is needed during a natural disaster is compounded by continually changing conditions, disrupted and damaged infrastructures, and limited transportation and communications. The next challenge is getting the required resources to the location where they are needed as quickly as possible. Historically, many organizations have come together to effectively bring these resources to those in need.

The United States military has a considerable legacy of assisting those in need around the world. As Elleman (2007) noted, "humanitarian relief has long been recognized as a mission of the American armed forces and of the U.S. Navy in particular" (Foreword). Thus, the Secretary of Defense (SECDEF) issued policy guidance for the DoD overseas Humanitarian Assistance Program (HAP), emphasizing interoperability and capacity building, which are key mechanisms of security cooperation. Humanitarian assistance (HA) project planners are encouraged to develop partnerships with host nation (HN) representatives as well as "[state government] agencies as appropriate . . . to conduct HA projects that benefit the civilian populace and enhance the host government's ability to provide essential services for its populace" (Office of the Secretary of Defense [OSD], 2009, p. 6).

As a result, the DoD is preparing for, and contributing more effectively to, foreign disaster relief and HA missions. As the OSD stated in its 2009 policy guidance, "DoD HA projects must also address the humanitarian needs of the targeted population; projects must be designed in coordination with HN representatives and the United States Agency for International Development (USAID) to generate a sustained humanitarian impact" (p.

7). As the OSD (2009) guidance further stated, "All HA projects should maximize visible U.S. military participation" (p. 8). The SECDEF explained that "active DoD participation improves the prospects for developing channels of access and influence, potentially provides operational readiness benefits, and generates unique training opportunities" (OSD, 2009, p. 8). To achieve a successful HA/DR response, Thomas (2003) claimed that it "depends on the ability of logisticians to procure, transport and receive supplies at the site of a humanitarian relief effort" (Apte, 2009, Introduction). With the SECDEF's guidance, the DoN is fully capable of accomplishing successful HA/DR missions around the world.

B. TOHOKU DISASTERS

On Friday, March 11, 2011, at 2:46 p.m., Japan suffered a calamitous 9.0-magnitude (M9) earthquake 80 miles east of Sendai, Honshu, Japan, when the Pacific tectonic plate violently thrust or moved beneath the North American plate, forcing the North American plate upward (United States Geological Survey [USGS], 2011a). The USGS National Earthquake Information Center reported that the Tohoku earthquake occurred between the Pacific and North American plates, at 38.297°N, 142.372°E, at a depth of 18.6 miles (USGS, 2011a). The earthquake lasted for approximately five minutes, and the energy from the plate compression displaced massive sums of ocean water. As the water neared land, the built-up energy produced a 32-foot tsunami, causing astonishing destruction to Japan's northeastern coastline (University Navstar Consortium [UNAVCO], 2011). These two natural disasters caused a catastrophic crisis at the Fukushima Dai-ichi Nuclear Power Plant in Honshu, Japan.

Once both USGS and Japanese seismologists updated the magnitude from 8.9 to 9.0, the Tohoku earthquake became the largest earthquake to hit Japan in recorded history and the fourth largest earthquake in the world since 1900 (USGS, 2011b). The black star east of Sendai in Figure 1 indicates the location of the earthquake's epicenter. A series of foreshocks shook Japan for two days prior, as well as several sizeable aftershocks for two days following the M9 earthquake. The powerful earthquake moved global positioning system (GPS) stations nearest the epicenter 13 feet east and shifted Earth on its axis by an estimated 6.5 inches (Chang, 2011).

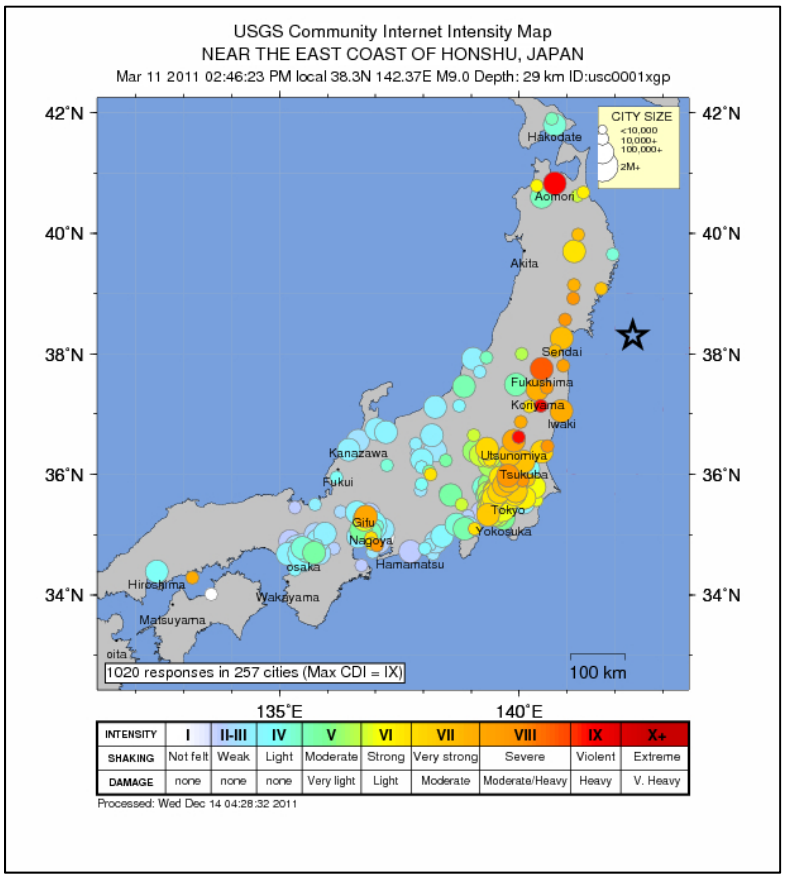

Figure 1. Japan Intensity Map (From: USGS, 2011c)

Nine magnitude-7 earthquakes have occurred in the Japan Trench subduction zone since 1973 (USGS, 2011b). Offshore earthquakes and ensuing tsunamis often hit this coastal region "because it has many deep coastal embayments that amplify tsunami waves and cause great wave inundations" (USGS, 2011b). As illustrated in Figure 2, the

fierce then diminishing tsunami impact stretched across the globe in less than 24 hours. The tsunami damaged buildings and homes in the Galapagos Islands, Peru, Chile, Hawaii, California, and Oregon (USGS, 2011c).

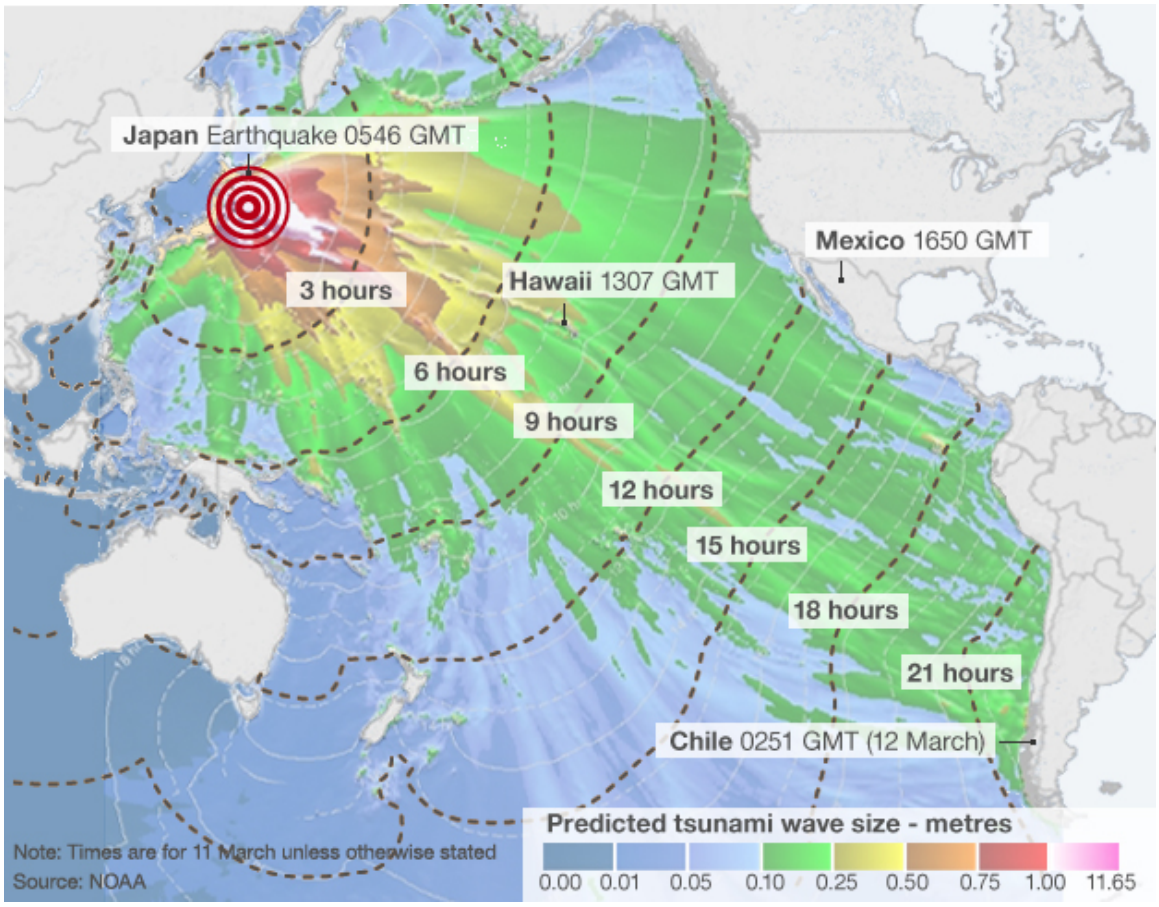

Figure 2. Predicted Tsunami Wave Propagation (From: Bruckner, 2011)

In the past decade, there have been around 400 reported disasters per year, affecting nearly 150–220 million people per year and resulting in damages to the tune of $20 billion per year (Vos, Rodriguez, Below, & Guha-Sapir, 2010). The total estimated cost of the Tohoku disaster exceeded $309 billion, which may be the most expensive natural disaster ever recorded (USGS, 2011a).

From Chiba to Aomori, the earthquake and tsunami caused 15,703 confirmed deaths and 5,314 injuries, and approximately 4,647 people remain missing (USGS, 2011c).

Along the coastline, destruction and damage caused displacement for approximately 131,000 people and destroyed 332,395 buildings, as evidenced in Figure 3.

Figure 3. Port of Ofunato, Japan (From: Montesino de Stuart, 2011)

However, the massive tsunami hit Iwate, Miyagi, and Fukushima the hardest. Nuclear reactors were severely damaged, and utilities such as gas, water supplies, and electricity were disrupted (USGS, 2011b). According to the USGS (2011b), approximately 2,126 roads, 56 bridges, and 26 railways were destroyed or damaged. Fires erupted in Chiba, landslides occurred in Miyagi, and "at least 1,800 homes destroyed when a dam failed in Fukushima" (USGS, 2011b). On March 15, four days after the initial earthquake, a harsh winter storm dropped snow on the devastated cities. As Japanese Prime Minister Naoto Kan observed, "In the 65 years after the end of World War II, this is the toughest and the most difficult crisis for Japan" (CNN Wire Staff, 2011).

Apte (2009) classified disasters into four categories based on whether they have a slow or sudden onset and whether the damage is localized or dispersed. The level of

difficulty of operations in providing humanitarian assistance and disaster relief increases as the onset speed changes from slow to sudden and as the disaster is no longer localized. In reference to this model, Figure 4 indicates the classification of each stage of the Tohoku crisis and the level of difficulty associated with each stage according to Apte's model. The M9 earthquake is classified as a localized, sudden-onset disaster. The follow-on tsunami is classified as a dispersed, sudden-onset disaster. The nuclear crisis is classified as a dispersed, slow-onset crisis.

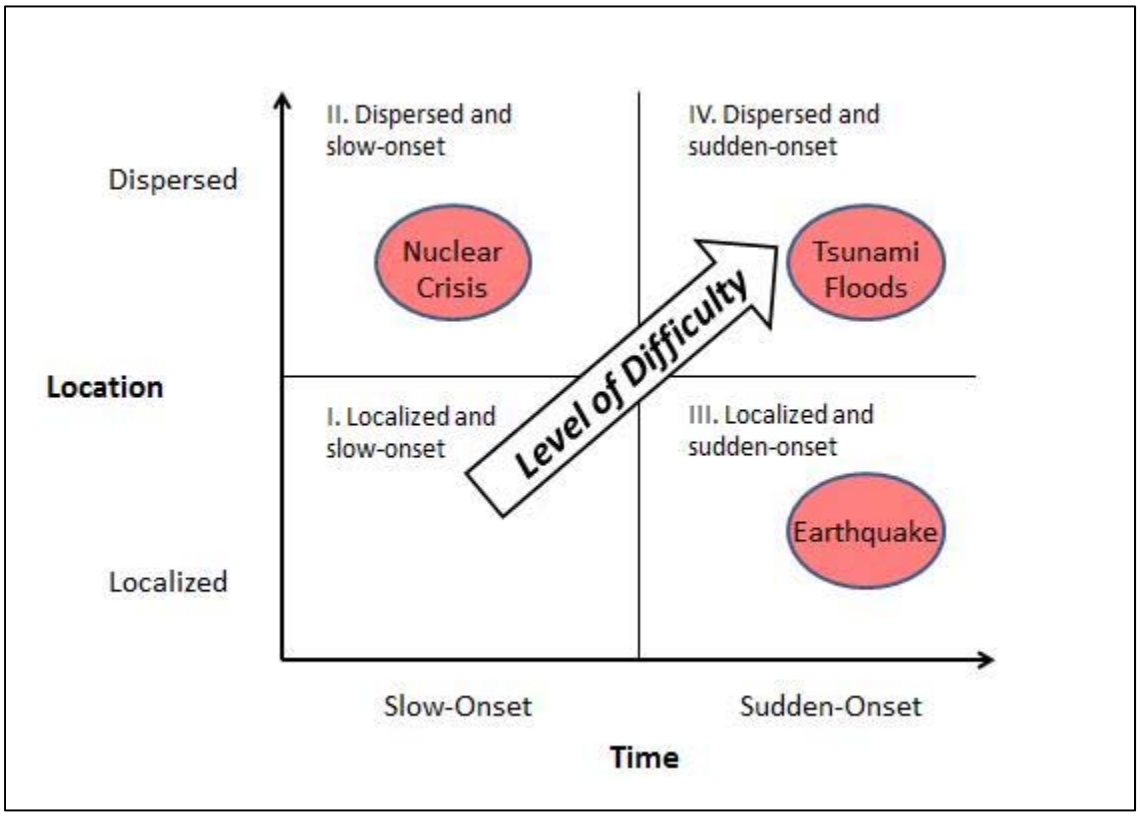

Figure 4. Tohoku Crisis Classification (After: Apte, 2009)

Note. This figure was adapted from the source by adding the location of each event on the matrix.

C. JAPAN'S REQUEST FOR ASSISTANCE

Immediately following the disaster, the Japanese government formally requested humanitarian assistance from the United Nations (UN), the United States Embassy Department of State (DoS), and the USAID. The DoS, as outlined in the Presidential

Directive/NSC-27 of 1978, assumes the role as lead federal agency (LFA) in the event of a non-military disaster (Perry, 2009). Within the USAID, which is a subagency of the DoS, is the Office of Foreign Disaster Affairs (OFDA). The OFDA has the primary responsibility for coordinating U.S. disaster response and is designated as the LFA at the operational level (Perry, 2009). At the operational level, the USAID deploys Disaster Assistance Response Teams (DARTs) to analyze and assess the scope of the damage and the capabilities of host-nation assets and to coordinate ground efforts with other agencies, non-governmental organizations (NGOs), and even the military (Perry, 2009). Figure 5 outlines the flow of information in the disaster relief process in relation to the DoS as the LFA.

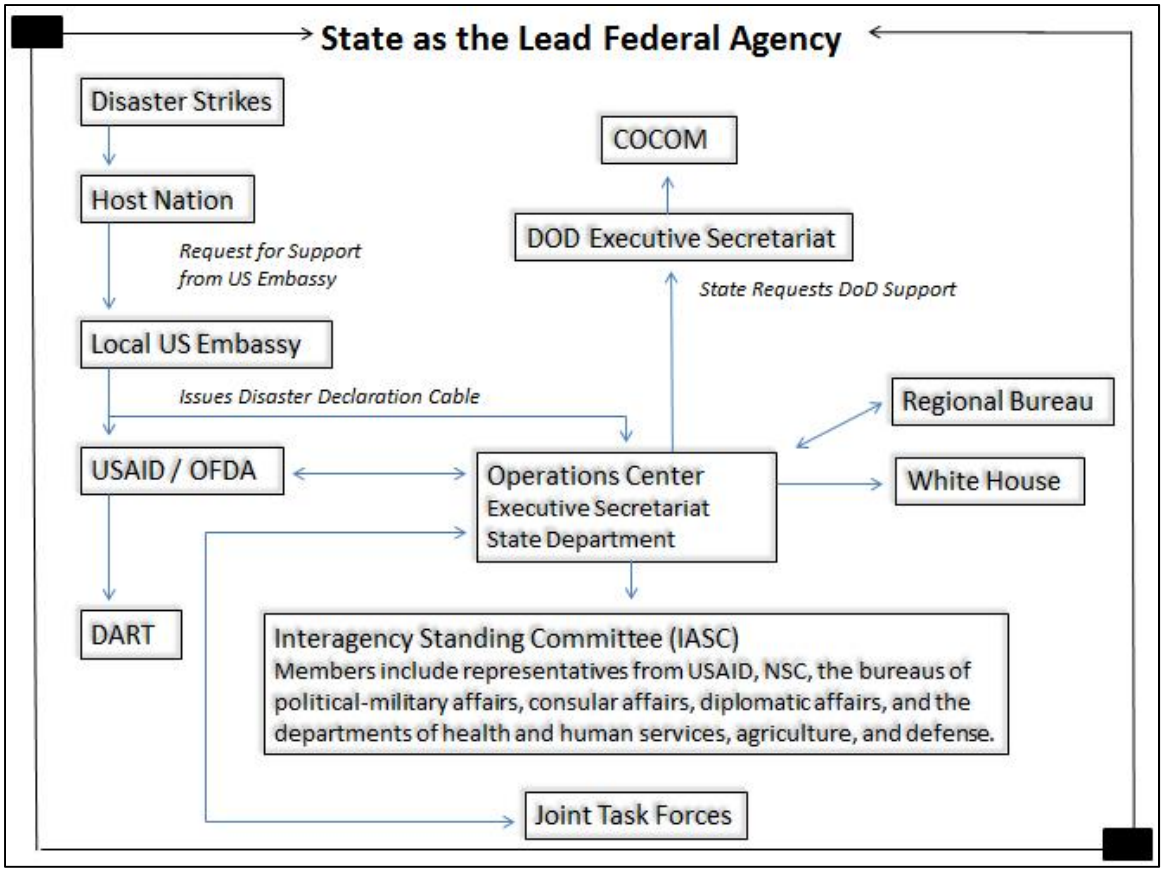

Figure 5. State as the Lead Federal Agency (After: Perry, 2009)

Note. This figure was adapted from the source by adding the Disaster Strikes category to the diagram.

Although the USAID generally prefers to use civilian assets to accomplish its mission, the immense distance and scope of the Japanese disaster required the use of military assets. In a memorandum dated March 11, 2011, Executive Secretary Christa White of the USAID formally requested the first involvement from the DoD, seeking "assistance to provide [airlift] transportation support on a reimbursable basis to the overall U.S. Government relief effort in Japan" (USAID, 2011, p.1). Based on the recommendations of the DART, DoS Executive Secretary Stephen Mull requested additional DoD involvement to provide sea and air transportation support in conducting search and rescue operations, regional disaster surveillance and assessments, logistical support to the government of Japan, and refueling assistance to Japanese aircraft (DoS, 2011).

D. DEPARTMENT OF DEFENSE INVOLVEMENT

Responsibility for military response to any disaster around the globe lies with the geographic combatant commander (COCOM). Presently, there are six geographic COCOMs covering the regions of North America, South America, Europe, Africa, Southwest Asia, and the East Asia/Pacific. The United States Pacific Command (USPACOM), headquartered in Hawaii, is the COCOM for the East Asia/Pacific area of responsibility (AOR). Figure 6 shows a detailed map of the USPACOM AOR, which covers 36 countries home to 50% of the world's population, a majority of the world's ocean island nations, and about half of Earth's surface area. Because of this vast area of coverage, one of the USPACOM's primary mission objectives is to strengthen and expand relationships with allies and partners (USPACOM, 2011a). A primary means of accomplishing this objective is through engaging in HA/DR missions.

Figure 6. USPACOM Area of Responsibility Map (From: USPACOM, 2011a)

The naval element of the USPACOM is the commander of the United States Pacific Fleet (COMPACFLT). The COMPACFLT comprises all air, surface, and subsurface naval elements throughout the western United Sates, as well as throughout the Pacific regions of Hawaii, Korea, the Marianas, and Japan. Within the country of Japan alone, the DoD maintains nearly a dozen major bases and facilities, half of which fall under the purview of the COMPACFLT. U.S. presence in Japan constitutes about 38,000 military Service members ashore, 11,000 afloat, and nearly 5,000 DoD civilian personnel (Chanlett-Avery & Feickert, 2011). Figure 7 shows the location of major U.S. military installations relative to the epicenter of the March 11, 2011, earthquake.

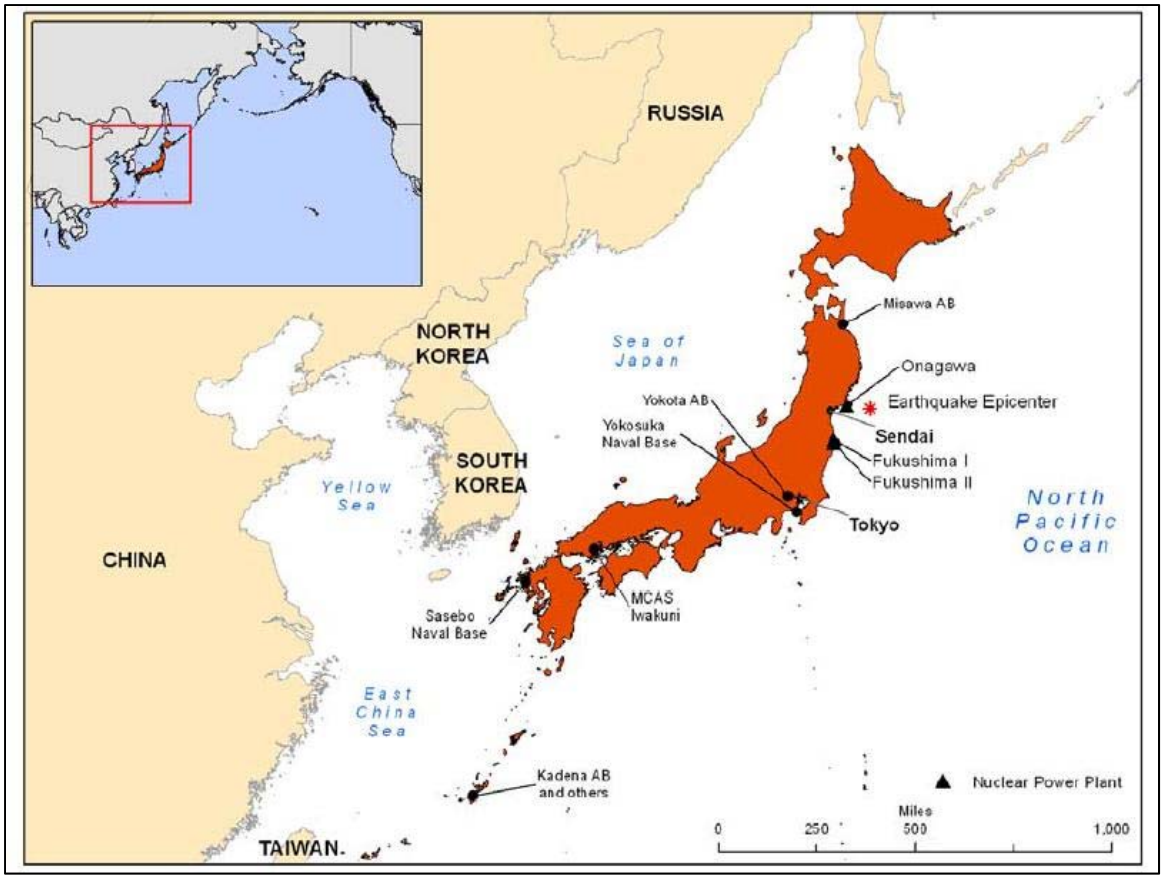

Figure 7. Map of Japan and U.S. DoD Bases (From:Chanlett-Avery & Feickert, 2011, p. 3)

Since the end of World War II, Japan has remained a close ally of the U.S. in the Pacific region. Therefore, Operation TOMODACHI, which is Japanese for *friend*, became the official name of the DoD relief effort. DoD efforts during the first 10 days of the disaster focused heavily on transport of relief supplies, personnel, and equipment. In a statement to the media on March 12, 2011, the U.S. ambassador to Tokyo indicated that United States Ship (USS) *Ronald Reagan* (CVN 76) Carrier Strike Group (CSG), originally headed east, was diverted to provide relief efforts to Japan (Embassy of the United States, 2011). Other ships of the *Ronald Reagan* CSG included guided-missile cruiser (CG) USS *Chancellorsville* (CG 62), guided missile destroyer (DDG) USS *Preble* (DDG 88), and combat logistics force ship USNS *Bridge* (T-AOE 10) (CRS, 2011). Other Japan-homeported responders included the guided missile cruisers USS *Shiloh* (CG 67) and USS *Cowpens* (CG 63); guided missile destroyers USS *Fitzgerald* (DDG 62),

USS *John S. McCain* (DDG 56), USS *Mustin (*DDG 89), USS *McCambell* (DDG 85) , and USS *Curtis Wilbur* (DDG 54); amphibious ships USS *Essex* (LHD 2), USS *Tortuga* (LSD 46), USS *Germantown* (LSD 42), and USS *Harper's Ferry* (LSD 49)*;* and 7th Fleet command ship USS *Blue Ridge* (LCC 19) (Chanlett-Avery & Feickert, 2011). A myriad of rotary and fixed-wing aircraft, unmanned aerial surveillance vehicles, and amphibious landing craft, each able to perform unique missions as needed, accompanied the naval assets during Operation TOMODACHI.

In 2007, the DoN, in concert with the U.S. Coast Guard (USCG), added HA/DR as one of its six core capabilities, stating,

> Building on relationships forged in times of calm, we will continue to mitigate human suffering as the vanguard of interagency and multinational efforts, both in a deliberate, proactive fashion and in response to crises. Human suffering moves us to act, and the expeditionary character of maritime forces uniquely positions them to provide assistance. Our ability to conduct rapid and sustained non-combatant evacuation operations is critical to relieving the plight of our citizens and others when their safety is in jeopardy. (DoN, 2007)

This document marks the first time that the DoN significantly recognizes HA/DR as a legitimate mission area worthy of the same focus as missions like strategic deterrence, power projection, and maritime security. For Operation TOMODACHI, the DoD activated elements of Joint Task Force (JTF) 519 to augment U.S. Forces Japan, later named Joint Support Force–Japan (JSF–J), headed by the current commander of U.S. Forces Japan, Air Force Lieutenant General Burton Field.

E. OVERSEAS HUMANITARIAN DISASTER ASSISTANCE AND CIVIC AID FUNDING

With the onset of a natural disaster or event that requires the DoN to provide humanitarian assistance, comptrollers and financial managers rely heavily on the OHDACA appropriation to fund obligations incurred throughout the response effort. According to Phillips (1997), prior to 1986, the "Department of Defense had no statutory authority to perform humanitarian and civic assistance, except under the Economy Act or as part of a security assistance program. In 1986, Congress enacted DoD's first statutory

authority in 10 United States Code (U.S.C.) § 401" (p. 231). The OHDACA appropriation funds several statutorily authorized OHDACA programs, including those found in Table 1.

Table 1. Title 10 Statutes Pertaining to Humanitarian Assistance
(From: Ohlweiler, 2011, p. 22)

Statute	Subject
10 U.S.C. § 401	Humanitarian and Civic Assistance (HCA) provided in conjunction with military operations
10 U.S.C. § 402	Transportation of humanitarian relief supplies to for NGOs
10 U.S.C. § 404	Foreign Disaster Assistance
10 U.S.C. § 407	Humanitarian Demining Assistance
10 U.S.C. § 2557	Excess non-lethal supplies for humanitarian relief purposes
10 U.S.C. § 2561	Authorizes use of DoD humanitarian assistance appropriations for transportation of humanitarian relief and for other humanitarian purposes

The OHDACA is a component of the defense-wide operations and maintenance (O&M) appropriation managed by the Defense Security Cooperation Agency (DSCA). The DSCA is a key player in the immediate response to natural or man-made disasters and aids in the facilitation of humanitarian assistance provided by U.S. military forces. The DSCA oversees various relief and assistance programs, funding an array of relief programs abroad (Weinberger, 2005). The DSCA's OHDACA funding is a multi-year appropriation, which is open for obligations for a period of two years. Once the appropriation has expired, the appropriation remains open for an additional five years for the liquidation of any outstanding expenditures. According to the DSCA's (2010) *Fiscal Year 2011 Budget Estimates* for OHDACA,

> the Overseas Humanitarian, Disaster and Civic Aid (OHDACA) appropriation supports the Secretary of Defense and Combatant Commanders' security cooperation strategies to build indigenous capabilities and cooperative relationships with allies, friends, civil society,

> and potential partners. The appropriation provides low cost, non-obtrusive but highly effective activities that help partners help themselves, improves access to areas not otherwise available to U.S. Forces, and build collaborative relationships with host nation's civil society. (p. 827)

The DSCA's (2010) *Fiscal Year 2011 Budget Estimates* for OHDACA also breaks down the funding into sub-activities consisting of three operational force programs: (1) humanitarian assistance, (2) humanitarian mine action (HMA), and (3) the Foreign Disaster Relief Initiative (p.835). The OHDACA programs support the U.S. military in meeting the requirements of the U.S. national security strategy and, in turn, the DSCA mission (Walters, 2001).

When Congress signs the Appropriations Act into law, the Office of Management and Budget (OMB) apportions the authorized amount of OHDACA funds to the DSCA. The DSCA then allocates the OHDACA funds through each Service's respective Office of the Assistant Secretary of the Navy for Financial Management and Comptroller (OASN[FM&C]) to the COCOMs.

The DSCA's (2010) *Fiscal Year 2011 Budget Estimates* for OHDACA states, "the Combatant Commanders' humanitarian assistance activities reflect the priorities of the Secretary of Defense and the Chairman, Joint Chiefs of Staff" (p. 829). These COCOMs will further distribute the spending authority to major commands and their subordinate activities based on requirements requested from the USAID. The USAID-requested items and services are those specifically requested by the nation in need of humanitarian assistance. Activities are only reimbursed for relevant USAID-requested costs. 10 U.S.C. § 2561 states that humanitarian assistance is authorized

> to the extent provided in defense authorization Acts, funds authorized to be appropriated to the Department of Defense for a fiscal year for humanitarian assistance shall be used for the purpose of providing transportation of humanitarian relief and for other humanitarian purposes worldwide. (Humanitarian Assistance, 2011)

At the beginning of fiscal year 2011, the OHDACA funds total $109,731 million (DSCA, 2010). According to a Congressional Research Service article (Chanlett-Avery & Feickert, 2011), "on March 12, Secretary of Defense Gates authorized the USPACOM

to continue disaster relief operations and approved $35 million in OHDACA funding for these purposes" (p. 1). When the multiple disasters struck Japan, the DoD had enough OHDACA funds available to support Operation TOMODACHI activities through September 30, 2011. The OHDACA appropriation required no additional funding through transfer, reprogramming, or supplement.

In a 2011 memorandum, SECDEF Robert Gates stated,

> I hereby delegate to the Commander, U.S. Pacific Command (USPACOM), or his designees, the authority to expend Overseas Humanitarian Disaster and Civic Aid (OHDACA) funds to render humanitarian assistance on a non-reimbursable basis to include the transportation of non-DoD personnel and supplies, search and rescue by aircraft and ships, damage assessment, provision of medical assistance and purchase of relief commodities, and refueling and sustainment operations. (p. 2)

Based on the guidance from the SECDEF, the allocation of the DoN's OHDACA funds used for Operation TOMODACHI flowed through the OASN(FM&C) down to the USPACOM. The subordinate activities of the USPACOM submitted regular (i.e., weekly and monthly) cost reports pertaining to their participation efforts in Operation TOMODACHI. Initially, these subordinate activities operated utilizing their own operating budget of O&M funds. A military interdepartmental purchase request (MIPR) reimburses, with OHDACA funds, all expenditures relevant to the requirements that USAID requested in support of disaster relief efforts. As previously noted, the USAID is the LFA for the HA/DR operations within Japan. We further discuss the reimbursed costs associated with the USPACOM and Operation TOMODACHI in Chapter IV of this project.

III. METHODOLOGY

To determine the operating costs for Operation TOMODACHI, we started our research by collecting data and information from individuals at the OASN(FM&C), the USPACOM, and the COMPACFLT. We collected extensive information about OHDACA funding and the reimbursable process from the top level down to the unit level. We obtained the original working documents and spreadsheets utilized by the respective commands for day-to-day, or month-to-month, tracking of Operation TOMODACHI obligations. Additionally, we obtained a number of official letters, documents, and PowerPoint briefings related to Operation TOMODACHI and OHDACA funding.

For the purposes of our analysis, we only collected cost data for the units supporting Operation TOMODACHI from March 1 through June 30 of fiscal year 2011. The analysis begins with the reconciliation of OHDACA funds flowing from the OASN(FM&C) through the COMPACFLT and then down to the individual ship and aircraft units. In order to clearly see the flow of OHDACA funding, we performed the reconciliation by utilizing the previously mentioned working documents, the fiscal year 2011 OHDACA budget, and documents from the OSD. We conducted the analysis of actual operating costs by first applying techniques for the derivation of incremental change of each budgetary account for each week following the disaster event. We analyzed the cost data, then disaggregated and separated the costs by specific cost drivers. We illustrated the results in table and graphical format. This methodology is similar to that used by Ures (2011).

Ures' cost techniques provided us with the upper-level view of functional service costs. Upon completion of the incremental cost breakdown for each functional service area, we further analyzed the costs by exploring what drove each set of cost data. In order for us to explore these primary cost drivers, we utilized the spreadsheet working documents that the COMPACFLT provided for us. We took the reimbursable data provided in the spreadsheets and tabulated the information into graphs.

These graphs illustrate the two primary cost drivers found through our research. The purpose of this further analysis was to determine operating costs of specific ship and aircraft types for HA/DR missions.

IV. DATA ANALYSIS

A. REIMBURSEMENT PROCESS

Per 10 U.S.C. § 404 for foreign disaster assistance, the OHDACA appropriation funds direct costs such as transportation, supplies, services, and equipment associated with HA/DR missions (Foreign Disaster Assistance, 2009, § 404 (b)). In order for the DoN to participate in a HA/DR mission, it must first receive authorization from the host nation. The DoN must also receive authorization from the SECDEF for reimbursement of any expenses related to the HA/DR mission. The amount of OHDACA funding approved for that particular HA/DR mission is stated within the contents of the SECDEF's authorization. For Operation TOMODACHI, the SECDEF, Robert Gates, granted $35 million of OHDACA funding for reimbursable expenses (Chanlett-Avery & Feickert, 2011, p. 1). Although the time of authorization to start the HA/DR mission and the time of the grant for reimbursable funds may not always coincide, naval commands diligently track all direct and indirect costs incurred in support of the mission. As directed, the individual commands report their costs through their chain of command to the Budget Submitting Office (BSO). Once the SECDEF's OHDACA authorization is given, the funding reimbursement process begins.

When the BSO receives and verifies all of the HA/DR costs that the subordinate commands have reported, it then reports the reimbursements by MIPR. A MIPR "is a multi-purpose document that is used between federal agencies and DoD components" (Potvin, 2009, p. 96). For Operation TOMODACHI, the MIPR is the primary document used to reimburse the subordinate commands for incremental costs incurred during the HA/DR mission. The MIPR document initiates the actual flow of OHDACA funding.

B. OVERSEAS HUMANITARIAN DISASTER ASSISTANCE AND CIVIC AID FUNDING FLOW

Practical Financial Management: A Handbook for the Defense Department Financial Manager (Potvin, 2009) states that "once Congress has appropriated funds and the President signs the appropriation into law, the spending authority must be transferred

to those in the agencies who will obligate the government to make payments from the Treasury" (p. 15). In order to analyze the operating costs effectively, it is important to start from the beginning with the OASN(FM&C) planning process. During the initial planning process of HA/DR funding, the OASN(FM&C) works synchronously with the DSCA and other key players, such as the President, the DoS, the DoD, and the USAID. The OASN(FM&C), as the DoN's budget office, works closely with the Joint Staff and the OSD to provide HA/DR funding estimates based on information derived from a cost model database. This database gives a multi-breakdown of main cost categories. Examples of some of these categories include personnel, personnel support, transportation, and operation support. This estimate is then used as a top-line estimate for the authorization process (Ringstad, 2011).

The flow of the OHDACA appropriation is depicted in Figure 8. The reimbursable process for Operation TOMODACHI starts at the OASN(FM&C)/DSCA level. There are a number of key players in the reimbursement process. It is important to note that many activities report HA/DR costs to the OASN(FM&C). However, this project focuses on only the incremental costs associated with specific activities under the USPACOM. Therefore, only the USPACOM activities are depicted in Figure 8.

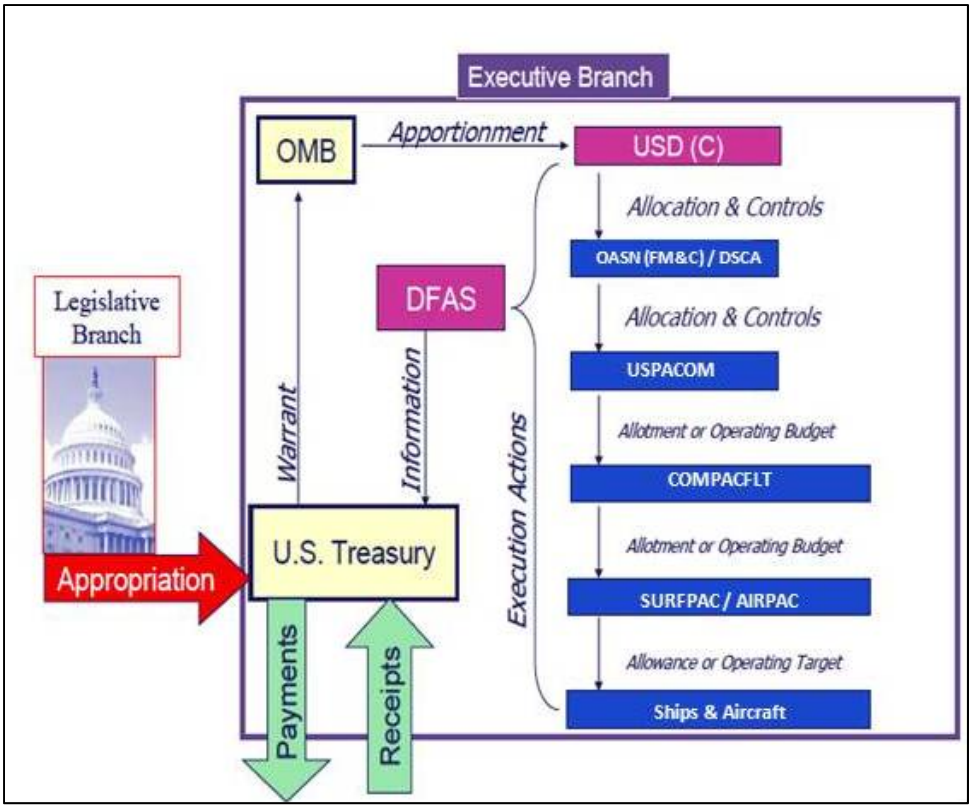

Figure 8. Flow of OHDACA Funding (After: Potvin, 2009, p. 17)

The flow of funding does not start until the individual ship and aircraft squadron activities report their incremental HA/DR costs up through the Commander Naval Surface or Air Forces, U.S. Pacific Fleet (SURFPAC/AIRPAC), through the COMPACFLT, to their BSO, the USPACOM. The COMPACFLT directly coordinates the reporting and collecting of costs through the USPACOM (Semilla, 2011). Units reported costs daily during the early months of Operation TOMODACHI. Towards the latter part of fiscal year 2011, reporting went from daily, weekly, and monthly reports to quarterly reports. Upon completing a thorough review and verifying the reports, the COMPACFLT submits them to the USPACOM, who then verifies the costs and reports those numbers to the OASN(FM&C). Concurrently, the USPACOM also creates an MIPR to reimburse all approved incremental costs related to the Operation TOMODACHI mission. Unfortunately, activities that submit costs that are not directly tied to the HA/DR mission do not receive reimbursable funding. Those expenses are paid

for directly out of that activity's budgeted operations and maintenance, Navy (O&M, N) funds.

C. OPERATION TOMODACHI FUNDING FLOW RECONCILIATION

As we mentioned in Chapter I Section E, the original memorandum from the SECDEF authorized $35 million of OHDACA funding for disaster relief efforts (Chanlett-Avery & Feickert, 2011), but as the Operation TOMODACHI mission progressed, the SECDEF authorized more OHDACA funding for DoD expenditure. In an action memorandum from the Under Secretary of Defense for Policy (Flournoy, 2011), the SECDEF granted another $10 million on top of the $95 million already authorized for the DoD to utilize for the Operation TOMODACHI mission. This addition brought the final total of authorized reimbursable OHDACA funding to $105 million for DoD expenditures. As of June 30, 2011, the OASN(FM&C) reported its status of funds as depicted in Figure 9. This status shows that the DoD has obligated $80.4 million of the authorized $105 million. The $24.6 million remains for obligation.

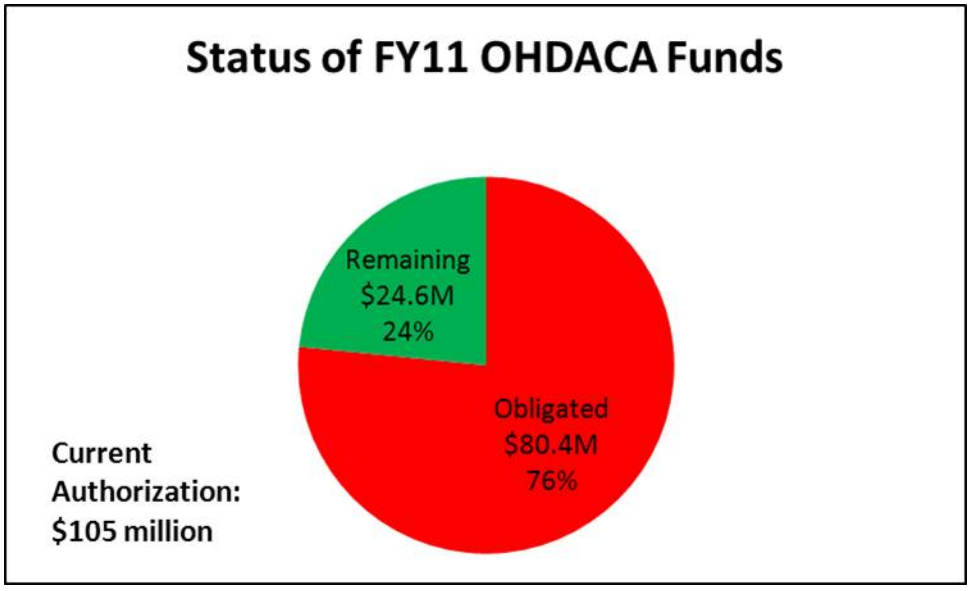

Figure 9. OASN(FM&C) Status of Funds (From: Ringstad, 2011)

The total $33.7 million of OHDACA funding reimbursed all naval components and units that provided assistance. The COMPACFLT, Naval Sea Systems Command (NAVSEA), Naval Air Systems Command (NAVAIR), and Space and Naval Warfare Systems Command (SPAWAR), as well as a few other DoN commands split the $33.7 million. In this report, we focus primarily on the amount reimbursed to units operating under the COMPACFLT. According to Lieutenant Commander Semilla (2011), the "COMPACFLT received about $27.8M in OHDACA reimbursements for Operation TOMODACHI."

D. COST DRIVERS

In the months following the Tohoku disaster, the DoD accumulated approximately $80 million in reimbursable costs associated with the Operation TOMODACHI response. Figure 10 shows the breakdown of the DoD costs. The DoN's portion, encompassing both the USN and United States Marine Corps (USMC), accounts for almost half of the total reimbursable costs. The 50% of DoN costs may be further broken down into costs associated with USN and USMC operations during the Operation TOMODACHI mission. An analysis of USN and USMC operations breaks down the costs into functional areas such as flight operations, personnel, and ship operations in order to see the main cost drivers. Ures' (2011) research of the Indian Ocean tsunami of 2004 identified many costs associated with the HA/DR response. The preponderance of the costs are aircraft flight operations and ship steaming operations, which are primarily driven by the cost of maritime and aviation fuels. This analysis of the Operation TOMODACHI costs substantiates Ures' (2011) findings, indicating that aircraft flight operations and ship steaming operations are the main cost drivers of the DoN HA/DR mission. These operations amount to approximately 68% of the total reimbursable costs associated with Operation TOMODACHI. Figure 11 provides a detailed breakdown of the cost drivers associated with the DoN's response to the Tohoku disaster.

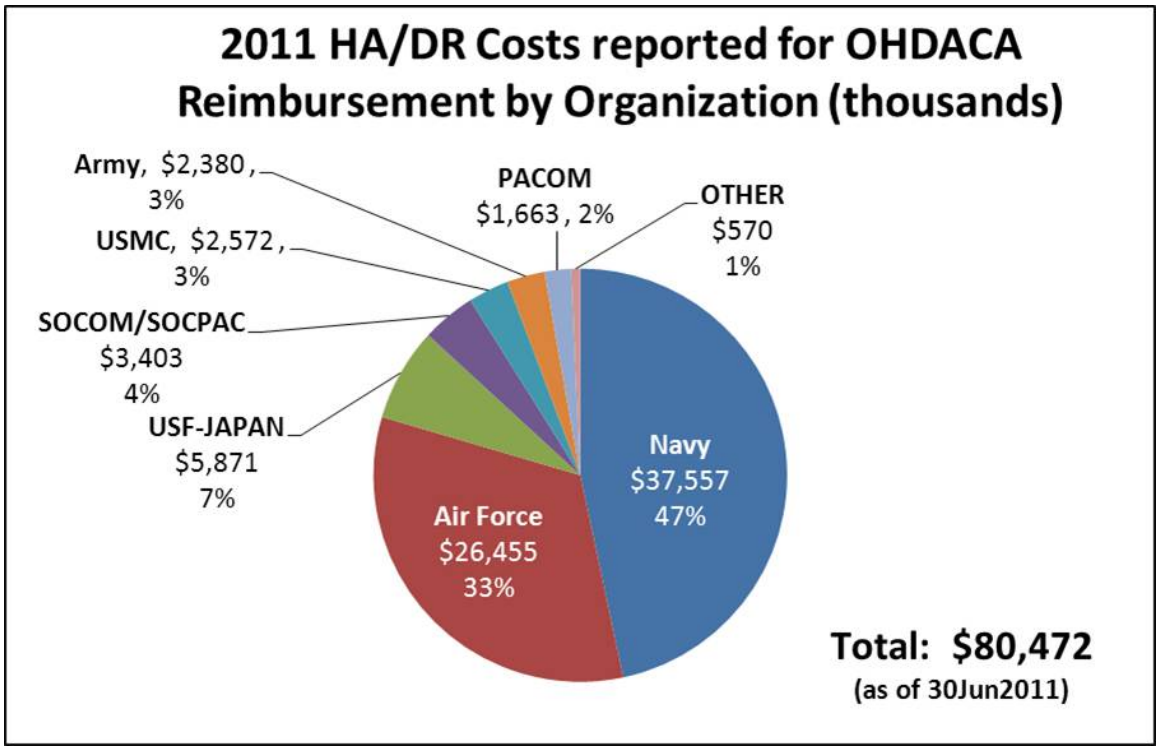

Figure 10. 2011 HA/DR Costs for OHDACA Reimbursement by Organization (From: Ringstad, 2011)

To date, no published research attempts to breakdown the main cost drivers any further. In an effort to determine the most cost-effective means of responding to similar disasters, our analysis breaks down the two most significant cost drivers. Aircraft flight operations and ship steaming operations comprise 41% and 27%, respectively, of the total costs that the DoN incurred.

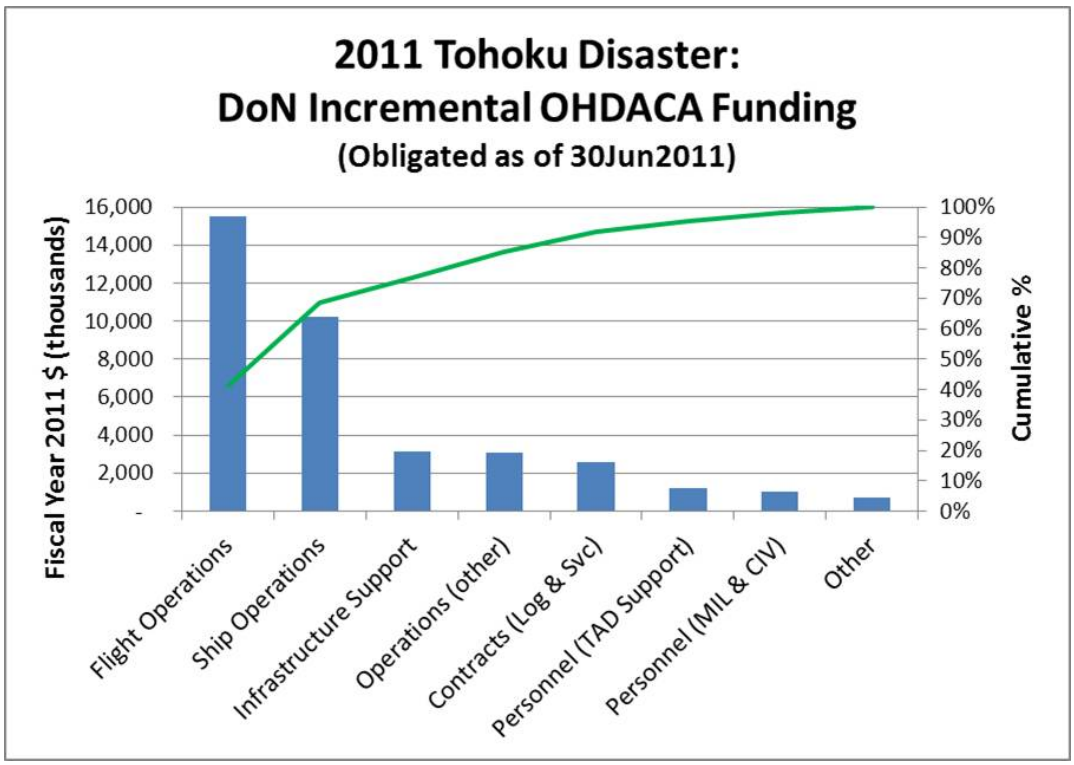

Figure 11. 2011 Tohoku Disaster: DoN Incremental OHDACA Funding

From March 12 to March 31, 2011, the weeks following the Tohoku disaster, the USN and USMC logged more than 3,350 flight hours in support of Operation TOMODACHI. These hours included missions such as delivery of HA/DR support and supplies, search and rescue, logistics, intelligence/surveillance/reconnaissance, and force protection (COMPACFLT, 2011). Table 2 outlines the utilization of each aircraft type during Operation TOMODACHI, the number of mission flight hours flown, the composite rate used to calculate OHDACA reimbursement, and the total cost associated with each aircraft type. Figure 12 shows the various USN and USMC aircraft employed throughout the response to Operation TOMODACHI, as well as the flight hours and costs associated with each. The analysis of aircraft flight hours and associated costs indicate that fixed-wing flying hours are almost twice that of rotary-wing, 2,031 hours compared to 1,223 hours, and that the associated costs are nearly triple that of rotary wing flight operations. The significant difference in the composite flying hour rate of each class of aircraft explains the variations between the aircraft types. For example, a USMC CH-46E costs approximately $4,408 per flight hour to operate, whereas a USN F/A-18F costs

over $9,200 per flight hour (COMPACFLT, 2011). These rates are extracted from the Office of the Chief of Naval Operations (OPNAV) N43 Flying Hours Program (FHP), a database that tracks a three-year moving average of costs associated with operating all aircraft that the USN and USMC flies.

Table 2. Operation TOMODACHI Flying Hours and Associated Costs

Operation TOMODACHI Flying Hours and Costs			
Aircraft Type	Flight Hours	Composite Rate per Flight Hour	March-11 Flight Hour Costs ($k)
USMC CH-46E	336	$ 4,408	$ 1,480.95
USMC CH-53E	12	$ 11,714	$ 140.57
USMC KC-130J	409	$ 4,239	$ 1,733.26
USMC UC-12F	128	$ 1,756	$ 224.26
USMC UC-12W	53	$ 1,136	$ 59.63
USMC UC-35D	125	$ 1,454	$ 327.03
USN C-12	75	$ 1,749	$ 130.33
USN C-2A	193	$ 8,586	$ 1,657.02
USN E-2C	200	$ 6,604	$ 1,324.86
USN EA-6B	50	$ 8,994	$ 447.90
USN FA-18C/E/F*	979	$ 9,226	$ 5,318.09
USN H-60B/F/S/H*	875	$ 3,534	$ 3,166.50
USN P-3C	219	$ 6,123	$ 1,339.68
		Total Flying Costs:	**$ 17,350.05**
*Represents an average of the composite flying rate for all models of a particular air frame.			

Note. The table was created from data received from COMPACFLT, 2011.

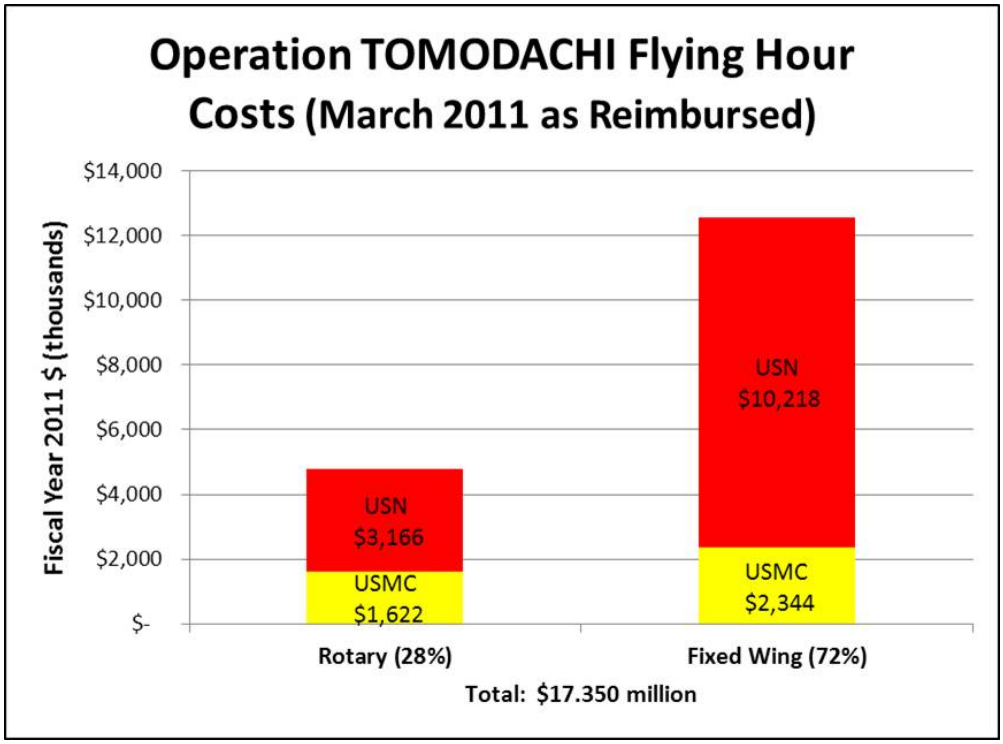

Figure 12. Operation TOMODACHI Flying Hour Costs by Aircraft Type and Category

Note. This graph was created from data provided by COMPACFLT, 2011.

From March 11 to April 9, 2011, USN ships consumed more than 80,000 barrels, or nearly 3.4 million gallons, of marine-grade diesel fuel (DFM) in direct support of Operation TOMODACHI (COMPACFLT, 2011). Figure 13 displays the quantity of DFM consumed by the USN broken down by ship class. This fuel, valued during the disaster at $126.84 per barrel, amounted to $10.2 million of OHDACA reimbursable costs.

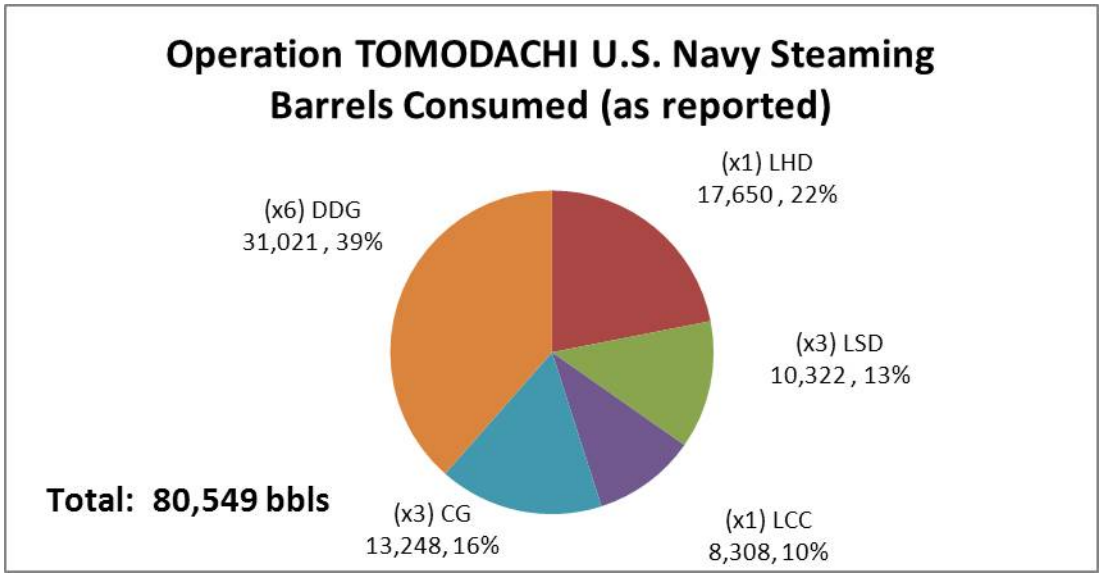

Figure 13. Operation TOMODACHI USN Steaming Barrels Consumed

Figure 14 details fuel costs associated with each class of ship and the corresponding month in response to the Tohoku disaster. The graph illustrates that the six DDGs burned $3.9 million in fuel, accounting for 38.5% of all fuel burned during the 30-day response period. This cost can be further broken down to $21,859 per DDG per day of response. Due to the loitering nature of HA/DR response operations, this number is significantly lower than the fiscal year 2011 deployed rate of $71,665 per DDG per day used by OPNAV N43's ShipOps planning model (OPNAV, 2012).

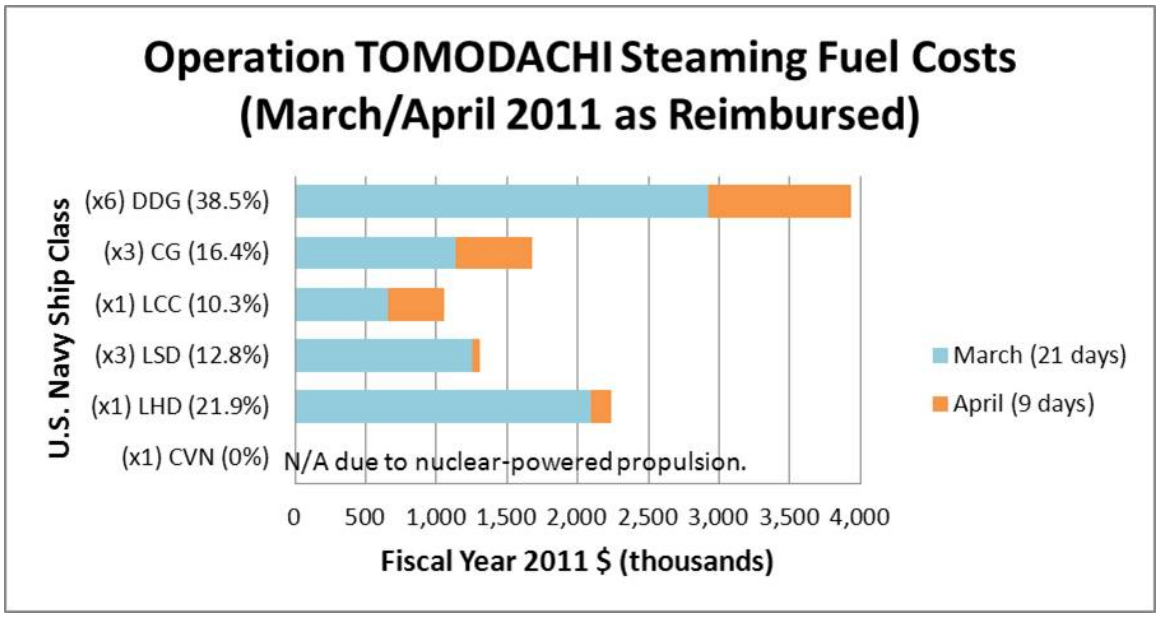

Figure 14. Operation TOMODACHI Steaming Fuel Costs

In events similar to the Tohoku disaster, the USN component responsible for responding to the mission—the COMPACFLT, in this case—must make necessary arrangements to respond immediately. However, to request OHDACA funding reimbursement, costs such as fuel consumption must be forecasted and a planning budget created. In the case of Operation TOMODACHI, COMPACFLT and OPNAV created budget forecasts using the ShipOps model. The USN uses the web-based FHP and Ship Ops model to budget for the operational costs associated with humanitarian response and other missions. The ShipOps model, which is similar to the FHP, also uses a three-year moving average of historical data to forecast costs such as fuel consumption, repair parts, consumables, utilities, and administration/training (Dini, 2011).

E. OTHER FINDINGS

The information from the OASN(FM&C) and COMPACFLT provided a vast amount of useful data about the Operation TOMODACHI HA/DR mission. Due to the focus of our project on the analysis of Operation TOMODACHI costs, this additional information is not applicable to our analysis. However, the information is very important in terms of what actually occurred with the resources provided during the mission. Three additional important findings are as follows:

1. Too Much "Lean Forward"

Moments after the Tohoku earthquake and subsequent tsunami, before the Japanese government formally requested humanitarian assistance, the USN rushed to initiate humanitarian relief efforts by sending supplies into the area. As Dini (2011) explains, the Navy provided many supplies in support of the HA/DR mission with the understanding the costs reported were reimbursable. Therefore, in an attempt to recapture the costs of the material, activities submitted these expenses in their requests for reimbursement from OHDACA funding. As already mentioned in Chapter IV Section B, activities that incur costs that are not approved for reimbursement with OHDACA funding must pay for those expenses out of their own budgeted O&M, N funds. The problem with the reimbursement process is that not all costs submitted in an activity's request get reimbursed (Ringstad, 2011), which may result in a significant funding loss for the DoN (Dini, 2011; Semilla, 2011). This problem occurs due to the USN's push to get supplies within the vicinity of the disaster as early as possible. The USN does this so that when the formal request from the Japanese government and USAID is received, the USN will already have the requested supplies on hand. Unfortunately, for official OHDACA funds reimbursement, the government of Japan must specifically request each item.

2. Excess Supply

Our research also uncovered another problem involving excess supplies sent to Japan but not turned over for the HA/DR mission. The build-up of supplies such as water and meals ready to eat (MREs) occurred during the rush to push supplies forward in anticipation of the needs of the Japanese government. Many USN units, based on previous experience with HA/DR missions, actively pushed these supplies. Unfortunately, many of these supplies were not properly turned over to the nation of Japan because the Japanese government did not actually request them.

Before the Operation TOMODACHI mission concluded, the majority of the excess supplies were collected by Fleet Logistics Center (FLC) Yokosuka where a large scale inventory was taken (Dini, 2011). At that point, the supplies remained in a

warehouse, were returned to originating units, or were marked for transaction reversal, returning them to the supply system. Near the end of the Operation TOMODACHI mission, the USN attempted to differentiate the excess supplies returned to FISC Yokosuka in order to remove all of those costs from reimbursement requests. FLC Yokosuka captured the costs associated with over 1,200 pallets of returned material (Semilla, 2011).

3. Concurrent Missions

In addition to the actual disaster relief and consequence management efforts, the DoN was largely engaged in a large-scale military-assisted departure for DoD civilians and dependents. OHDACA could not reimburse these efforts because the efforts did not directly support the government of Japan. The DoN was also heavily involved in other efforts due to the nuclear crisis; however, cleanup costs on affected ships or bases did not qualify for OHDACA reimbursement. Some of the general monitoring in Japan was reimbursable, and some was not. If a ship directly participated in the disaster relief efforts, some cleanup expenses could be submitted for reimbursement. For example, an aircraft carrier participating in flight operations in support of the disaster did qualify for reimbursement for completing a wash-down at sea while near the coast (Dini, 2011). However, the cost of setting up long-term monitoring equipment on bases to ensure DoD personnel are safe from nuclear contamination may not be reimbursed (Dini, 2011).

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V. CONCLUSION

The DoN must ensure that its HA/DR operations are both effective and fiscally efficient. However, the DoN cannot accurately forecast all potential HA/DR missions or the costs associated with responding to each one because each disaster and corresponding response costs are different. Therefore, identifying and analyzing the direct and indirect operating costs and the elements driving the associated costs is critical for budget analysts, comptrollers, and operational planners so that they can better prepare for future disasters. The DoN's Operation TOMODACHI HA/DR mission, and its initial response, provides us with lessons to be learned and, therefore, recommendations for improvement.

We determined that the incremental operating costs for the HA/DR missions in the 2010 Haiti earthquake, the 2010 Pakistan floods, and the 2004 Indian Ocean tsunami (Ures, 2011) were similar to the 2011 Tohoku earthquake and tsunami. Our analysis took Ures' technique one step further to determine the specific unit types, which incurred the most operating costs throughout the response. Our findings found that even though financial obligations for response material are made quickly, they should be made efficiently to ensure timely reimbursement. Additionally, ship and flight operations are the most costly and are best provided by the DoD. Finally, HA/DR missions remain a naval core competency, and the best way to maximize current capabilities is to improve information sharing and technological advancement. These results are in line with the conclusions of Ures (2011).

This research only examined cost drivers behind half of the $80 million in reimbursable OHDACA funding used in support of Operation TOMODACHI and did not examine any of the financial or operational aspects of the response to the nuclear disaster. Each of these is considered an area with great potential for further research. Based on our observation and analysis, we have identified several opportunities for improvement, which we will now discuss.

A. LACK OF STANDARD CONTINGENCY FINANCIAL MANAGEMENT GUIDANCE

During Operation TOMODACHI, financial guidance developed slowly due to personnel learning curves. For example, cost reporting guidance began with a FMR reference, adding specific answers periodically over time. The DoN required a standard supporting spreadsheet, but other activities did not have a similar requirement. Preceding legal opinions on OHDACA and HA/DR operations were useful but not readily available. Each Non-Combatant Evacuation Operation (NEO)-related question was researched by the operational comptroller to determine funding sources and entitlements, and many entitlement questions arose for personnel deployed to Yokota.

We recommend that COCOMs and the OSD establish standard contingency financial management guidance for JTFs for major types of operations. Contingency financial management guidance includes cost-reporting, cost-estimating, cost-reimbursement, NEO operations, and HA/DR operations. In turn, this guidance should be used as the basis for exercise finance cells. Once this guidance is promulgated, JTFs develop *off-the-shelf* policies for contingency entitlements. COCOM reimbursement guidance should explain how OHDACA funds reimbursements are made and authorized by using the standardized supporting documentation report. We also recommend that participating activities submit all cost data daily and segregate costs by major operations types. These recommendations will help alleviate redundancy and confusion.

B. LACK OF COMMAND AND CONTROL

Critical central organization of an HA/DR requirement approval process did not exist from the beginning of Operation TOMODACHI (Dini, 2011). The lack of central command and control resulted in consistently revised guidance for many responding activities. Thus, activities were told to support and lean forward in an effort to support relief efforts. However, the central authority providing procedure, guidance, and authorization did not exist to explain exactly what each activity was authorized to do. Without command and control, many activities assumed what material was needed to support the HA/DR mission, as well as what material and efforts could be reimbursed.

Therefore, we recommend the creation of an organized central command and control structure at the onset of the disaster. Once the structure is established, we recommend the promulgation of central guidance to all responding activities.

C. DEMAND FOR COST-ESTIMATING TECHNIQUES

Throughout Operation TOMODACHI, the USPACOM OHDACA analyst provided cost estimates prior to each authorization memorandum from the SECDEF for OHDACA funds. These memorandums were often compiled within a short time frame. For example, the OMB required JSF to provide cost estimates for approximately 200 requests from the government of Japan within 24 hours. Meanwhile, JSF required cost estimates for long-term radiation and environmental monitoring to help budget for potential costs for military installations in Japan (Dini, 2011). We recommend that JTFs develop and practice cost-estimating techniques using a defined construct during response exercises such as Terminal Fury.

D. DAILY CONSOLIDATED COST REPORTING AND LATE REPORTING

U.S. Forces-Japan (USF-J) requested and collected costs before cost-reporting relationships existed. Daily phone calls were made to help coordinate cost reporting. Unfortunately, Service comptrollers did not want to consolidate cost reports for their services and service headquarters (HQ) did not share cost reports with the USPACOM. The OSD required daily cost reports without requiring segregation of OHDACA and other costs. Additionally, the OSD did not report discrepancies in reports from the USPACOM and Service HQs. Another problem was late reporting from many Navy and Air Force units, as well as duplicative reporting to USF-J. Thus, we recommend that the COCOM request daily cost reports from Service HQs to share with the JTF. The daily standardized cost reports should include their tasked units, missions, and the number of personnel supporting the operation.

By relying on historic cost data provided by collective daily cost reporting, budget analysts may more effectively anticipate HA/DR costs and needs notwithstanding that each disaster varies in scope and mission. By successfully advocating improved data reporting and increasing communication interfacing, the DoN will successfully maintain

its exceptional core competencies by continuing its mission to support HA/DR operations around the globe. Thus, we also recommend that the JTF, COCOM, and OSD request cost segregation by situation and funding type. We also recommend that regional service comptrollers validate and consolidate costs daily for their Service's commands.

E. LINES OF COMMUNICATIONS

When JTF comptrollers push operational data to the JTF commander, OHDACA and other funds can be tracked and key cost drivers determined. During Operation TOMODACHI, other leads pushed changes in operations to support the budget when the comptroller was not present, due to rank, to answer funding questions in briefings (Dini, 2011). We recommend that JTFs develop and practice cost-estimating techniques using a defined construct during response exercises such as Terminal Fury. We also recommend that comptrollers, regardless of rank, be allowed to participate in briefings that involve fiscal matters. Further, JTF comptrollers should be consulted for funding paragraph input for outgoing messages and financial managers should provide consolidating guidance and review daily messages.

Order messages were written along operational chains of command vice administrative during Operation TOMODACHI, which prevented some activities from receiving critical and routine messages. We recommend that the JTF streamline cost-reporting lines of communication to ensure that all administrative chains of command receive key message traffic. We also recommend that HA/DR stakeholders within the DoD invest in a common communication network that enables information collaboration for cost-reporting, outgoing message traffic, and aid requisition during HA/DR operations. As Ures (2011) explained, broader communication feedback "may yield cost savings through improved efficiencies" (p. 41).

F. "PUSH" WITHOUT AUTHORITY

During Operation TOMODACHI, OHDACA funds were only reimbursed for relief supplies turned over with USAID approval. As a result, supply quickly exceeded demand. Unfortunately, the additional supplies were never turned over for the HA/DR efforts but were either left in a warehouse, returned to originating units, or the placed

back into the stock system after transactions were reversed (Semilla, 2011). At the end of Operation TOMODACHI, 1,200 pallets of excess relief supplies remained on station (Dini, 2011). Throughout Operation TOMODACHI, the DoN activities made obligations quickly to initiate the aid response. Thus, humanitarian supplies such as water and MREs were offloaded from a ship and flown to a landing site to support the response effort. However, because the Japanese government did not actually request the supplies directly, these supplies were not properly turned over. As a result, only a portion of these supplies was reimbursed (Semilla, 2011). We recommend that responding activities not lean too far forward in buying and *pushing* relief supplies. Instead, we recommend that activities first identify capacity and then move inventory to forward locations once relief supplies are requested. Additionally, we recommend that forward installations update their NEO plans to avoid large sudden funding requirements (Dini, 2011).

G. THE REIMBURSEMENT PROCESS

When a disaster occurs, activities initially obligate their direct funds and then request OHDACA funding reimbursement. Unfortunately, many costs submitted by an activity in support of Operation TOMODACHI were not reimbursed, which resulted in a substantial loss to the DoN (Dini, 2011). Additionally, when material is not considered incremental, activities are not reimbursed. For example, Commander, Fleet Forces Command (CFFC) had costs supporting radiological and biological aspects for the nuclear power plant, but these costs were not reimbursed because these costs were considered to be a service responsibility, thus not reimbursable through OHDACA (Ringstad, 2011). Consequently, we recommend streamlining the reimbursement process of an activity's request for reimbursement through the COCOM. We also recommend that HA/DR stakeholders within the DoN develop standard reporting requirements and ensure that all potential responders know what the reimbursement procedures are well before a disaster occurs. Then, at the start of a disaster, all responding activities will have the current reporting requirements and reimbursement prerequisites.

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